

# **Report of Rahul Gupta, MD, MPH, MBA**

**August 25, 2021**

## **I. BACKGROUND AND QUALIFICATIONS**

My background, education, training, and experience is set forth in my attached CV and stated herein. My primary field of practice is public health and internal medicine. I have significant experience in this field related to the opioid crisis. A practicing physician for more than 25 years, I received a master's degree in public health from the University of Alabama-Birmingham. I have been a visiting professor at the T.H. Chan School of Public Health, Harvard University, from 2015 to the present. I am an adjunct professor of the Department of Health Policy, Management and Leadership at the School of Public Health in West Virginia. From 2009 through 2014, I served as the Health Officer of Kanawha County, West Virginia, and then from 2014 through 2018 I served as West Virginia's State Health Commissioner. During this almost a decade, I spent most of my time investigating the opioid epidemic in West Virginia, including its cause and the resulting public harms. I witnessed firsthand the devastating effects of this epidemic on West Virginia. I also helped develop measures to combat the public harms created by the crisis. In my role as West Virginia State Health Commissioner, I developed, implemented, directed, and oversaw various investigations into the cause of the opioid crisis in West Virginia and the resulting public harms. These investigations were documented in various reports, including the "2016 WV Overdose Fatality Analysis: Healthcare Systems Utilization, Risk Factors, and Opportunities for Intervention" (published in 2017) and a 2018 report titled "Opioid Response Plan for the State of West Virginia," otherwise known as the "social autopsy" of West Virginia's opioid epidemic. I also witnessed firsthand the various public harms resulting from the opioid epidemic.

Foundational to my experience in public health, I also have knowledge, education, experience, and training in epidemiology. My education and training qualify me to be a licensed epidemiologist in West Virginia. Throughout my career as a public health expert and as a public health official, I regularly utilized epidemiological principles and investigatory standards in investigating, studying, and making determinations concerning the cause and effects of various public health issues, specifically issues related to the ongoing opioid epidemic.

I also have experience, education, and training as a practicing physician. I am board certified in Internal Medicine. I was certified in 1999 and re-certified in 2009 and 2020. Prior to coming to West Virginia, I served as a primary care physician in rural Alabama from 2000-2004. I was an assistant professor of medicine at Alabama-Birmingham from 2004-2007. During this time, I also managed HIV/AIDS patients in the 11-county northern Alabama region. I also served as an assistant professor of medicine at Vanderbilt University Medical School and assistant professor of medicine at Meharry Medical College from 2007-2009. I also served as a clinical assistant professor at the WVU School of Medicine, Charleston Campus from 2010 to 2015. I have been an associate professor at the Charleston School of Pharmacy since 2011. I am currently the Senior Vice President and Chief Medical and Health Officer at March of Dimes, which is a nonprofit organization that works to improve the health of mother and babies. I provide strategic oversight for March of Dimes medical and public health efforts. I also currently serve as an adjunct professor of medicine at Georgetown University Medical School and am a member of the teaching faculty at the T.H. Chan School of Public Health at Harvard University. On July 13, 2021, I was nominated by the President of the United States to serve as the 9<sup>th</sup> Director of the White House

Office of National Drug Policy.<sup>1</sup>

I have been a peer reviewer and editorial board member for scientific journals and for the National Academies of Sciences, Engineering, and Medicine and I have published more than 150 scientific manuscripts. I served as a principal investigator for numerous well-known clinical trials. I am a past Secretary of the West Virginia Board of Medicine, and I was elected to lead my peers as the 2016-2017 President of the West Virginia State Medical Association. I also served at the Executive Director of the Putnam County Health Department.

I am the recipient of several state and national awards, including the 2016 Howell Special Meritorious Service Award to Public Health by the Southern Health Association; the 2015 Jay Rockefeller Lifetime Achievement Award on the advancements in public policy in healthcare; and the 2013 Marie Fallon Award for Public Health Leadership by the National Association of Local Boards of Health. In 2017, the West Virginia Human Rights Commission recognized me as a Civil Rights Day Award honoree for outstanding contributions in the areas of civil rights, human rights, and the betterment of West Virginia's citizens. Among my numerous teaching and service awards and honors, I received the 2015 Milton and Ruth Roemer Prize for Creative Local Public Health Work by the American Public Health Association and was named "2017 West Virginians of the Year" for my work toward battling the opioid epidemic by the Pulitzer prize-winning Charleston Gazette-Mail. In 2018, I was named Public Official of the Year by Governing Magazine.

## **II. STATEMENT OF COMPENSATION**

I am being compensated for my time in this case at an hourly rate of \$600.

## **III. PREVIOUS TESTIMONY**

In the past four years, I testified by deposition in August of 2016 in the case of *State of West Virginia v. Amerisourcebergen Drug Corp, et. al.*, Civil Action No. 12-C-141. I also testified in depositions and at trial in the case of *The City Of Huntington v. Amerisourcebergen Drug Corporation, et al.*, Civil Action No. 3:17-01362 (SD-WV) ("CT2").

## **IV. MATERIALS REVIEWED AND CONSIDERED**

In addition to my knowledge, education, training, and experience, I have reviewed the following materials:

- 1) West Virginia Overdose Deaths Historical Overview 2001-2015, August 17, 2017;
- 2) 2016 West Virginia Overdose Fatality Analysis, W.Va. DHHR December 20, 2017;
- 3) 2017 Legislation and Substance Use Disorder Epidemic: West Virginia's Call to Action, May 10, 2107;
- 4) West Virginia's Contemporary Public Health Challenge: Substance Use Crisis, W.Va.

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<sup>1</sup> <https://www.whitehouse.gov/briefing-room/statements-releases/2021/07/13/president-biden-announces-11-key-nominations/>.

DHHR, June 24, 2016;

- 5) West Virginia Opioid Response Plan submitted to Governor Justice, January 30, 2018;
- 6) State of Health, W.Va. DHHR October 26, 2018;
- 7) Multistate Outbreak of Hepatitis A, May 2018;
- 8) 2017 West Virginia Viral Hepatitis Profile;
- 9) Massey, J., Kilkenny, M., Batdorf, S., Sanders, S. K., Ellison, D., Halpin, J., ... Gupta, R. (2017). *Opioid overdose outbreak — West Virginia*, August 2016. Morbidity and Mortality Weekly Report, 66(37);
- 10) Department of Health and Human Resources Office of Communications, *DHHR Announces Funding for Harm Reduction Programs - Charleston* (2017).;
- 11) West Virginia Department of Health and Human Resources Office of Communications, *Governor Tomblin Announces State Implementation of CDC Guidelines on Safe Use of Opioids* (October 19, 2016);
- 12) Joudrey, Paul J., Nicholas Chadi, Payel Roy, Kenneth L. Morford, Paxton Bach, Simeon Kimmel, Emily A. Wang, Susan L. Calcaterra, *Pharmacy-based methadone dispensing and drive time to methadone treatment in five states within the United States: A cross-sectional study*, Drug and Alcohol Dependence, 10.1016/j.drugalcdep.2020.107968, (107968), (2020);
- 13) O'Donnell, J. K., Halpin, J., Mattson, C. L., Goldberger, B. A., & Gladden, R. Matthew. (2017). *Morbidity and Mortality Weekly Report Deaths Involving Fentanyl, Fentanyl Analogs, and U-47700 —10 States*, July–December 2016, 3(43);
- 14) United States Department of Health & Human Services, *FACING ADDICTION IN AMERICA: The Surgeon General's Report on Alcohol, Drugs, and Health* (2016);
- 15) West Virginia Health Statistics Center Vital Statistic System (2017);
- 16) West Virginia Office of Epidemiology & Prevention Services, *Harm Reduction* (2017);
- 17) West Virginia University Birth Score Office, (no title) (2017);
- 18) West Virginia Health Statistics Center, *West Virginia Behavioral Risk Factor Surveillance System Report 2014* (2017).;
- 19) United States Census Bureau, US Census QuickFacts - West Virginia (2016) (Retrieved January 1, 2017);
- 20) West Virginia Department of Health and Human Resources. (2006) *The Burden of Arthritis in West Virginia*;

- 21) West Virginia Health Statistics Center, *The Burden of Arthritis in West Virginia, 2003, Brief No. 14* (2005);
- 22) WV Cancer Registry, WV Department of Health and Human Resources and West Virginia University Cancer Institute, Morgantown, WV, 2019 *West Virginia Cancer Burden Report* (February 2020);
- 23) West Virginia Health Statistics Center, *HSC Statistical Brief No. 28, Diabetes and Health Equity in West Virginia: A Review* (2005);
- 24) West Virginia Department of Commerce, Workforce West Virginia, injury statistics for the State of West Virginia;
- 25) Centers for Disease Control/National Center for Health Statistics National Vital Statistics System, Drug Overdose Death Data (2017).;
- 26) Centers for Disease Control National Center for Chronic Disease Prevention and Health Promotion Division of Population Health, BRFSS Prevalence & Trends Data (2016);
- 27) The Henry J Kaiser Family Foundation, Retail Prescription Drugs Filled at Pharmacies (Annual per Capita by Age) (2016);
- 28) United States Department of Agriculture Economic Research Service, State Fact Sheets: West Virginia (2017);
- 29) IQVIA data provided by Lacey Keller of Gryphon Strategies (attached as Exhibit 1); and
- 30) All literature, information, data, papers, reports, statistics, and references cited in this report, including footnotes.

## **V. SUMMARY OF OPINIONS**

1. There has existed and does now exist an opioid epidemic throughout the entire State of West Virginia which is marked by opioid-related overdose deaths, non-fatal overdoses, misuse, abuse, addiction, morbidity, crime, and communal suffering and devastation.
2. The opioid epidemic has resulted in a number of serious public health harms. These public health harms include opioid use disorder and addiction; morbidity; and mortality. These public health harms continue to exist throughout West Virginia and will do so for many years to come. Some of the morbidities associated with the opioid epidemic include:
  - a. Neonatal Abstinence Syndrome (NAS) and its consequences;
  - b. A significant rise in communicable diseases such as Hepatitis, HIV/AIDS, endocarditis, and other infections. There are consequential harms which are both

serious and expensive to manage and include cardiac valve infections, and skin and soft tissue infections;

- c. A healthcare system burden, including hospital care, 911 system, EMS system, and other allied healthcare professional nonfatal overdose visits; and
  - d. Untreated and undertreated mental health conditions.
3. The opioid epidemic has caused an increase in the number of children entering the foster care system in West Virginia, increasing the financial and emotional burden to communities.
  4. The opioid epidemic was caused by a large increase in the volume of prescription opioids delivered throughout West Virginia. Very large amounts of these prescription opioids were delivered to West Virginia from the late 1990s through in or about 2016. This led to consequential opioid use disorder, addiction, and other associated diseases.
  5. The opioid epidemic is multigenerational and transgenerational.
  6. There is a causal relationship between prescription opioids and a subsequent transition to street drugs such as heroin, fentanyl, and methamphetamine. Addiction causes an individual to seek opioids by any means necessary, especially when the supply of prescription opioids is no longer readily available, which includes illegal street drugs. From in or about 2012 through 2016, West Virginia experienced a decrease of prescription opioids and a corresponding increase in the number of overdose deaths from heroin and other synthetic opioids. The increase in non-prescription opioid related drug overdoses was caused by persons who were affected by opioid dependency and addiction to prescription opioids transitioning to heroin and other more readily available street drugs. This transition was foreseeable.
  7. From the 1990s through 2016 in West Virginia, there has been no change in public health conditions which justifies the substantial increase in supply of prescription opioids.
  8. Direct evidence of diversion can be found from the data reported in the 2016 West Virginia Overdose Fatality Analysis, W.Va. DHHR December 20, 2017, as well as data which reveals a substantial volume of opioids prescribed by a discreet subset of physicians
  9. The opioid epidemic is abatable. Appropriate measures to abate the opioid epidemic include, without limitation:
    - a. Invest in multidisciplinary education and training opportunities for individuals, families, vulnerable populations, professionals, and community stakeholders;
    - b. Medical treatment for opioid-related disease and co-morbidities;

- c. Establish comprehensive treatment and outreach efforts tailored to the diverse needs of individuals and families struggling with opioid and substance misuse disorders;
- d. Promote policies and ordinances that support families and caregivers struggling with opioid and substance misuse disorders;
- e. Support policies and laws that support families in crisis and strengthen the family unit;
- f. Identify evidence-based high-quality initiatives that have been shown to decrease opioid and substance misuse while ensuring access to pain medications for those with chronic pain;
- g. Expand understanding at the local level of litigation and policy issues with the aim of addressing the sometimes indirect yet complex issues affected by the opioid crisis; and
- h. Recognize the inconsistent response and action to the opioid crisis versus other forms of substance misuse and advocate for policies that address underlying health and socioeconomic disparities.

## **VI. BASIS FOR OPINIONS**

My opinions are based upon my background, education, training, and experience together with my investigations, analysis, findings, and research. In addition, the basis for my opinions is set forth in the publicly available reports I oversaw and directed as West Virginia State Health Commissioner, including the West Virginia Overdose Deaths Historical Overview 2001-2015, August 17, 2017, and in the 2016 West Virginia Overdose Fatality Analysis, W.Va. DHHR December 20, 2107; my deposition testimony in the CT2 case; my trial testimony in CT2; and documents I provided in response to a request for documents in connection with my deposition in CT2.

During my tenure as West Virginia's State Health Commissioner, I developed, directed, and oversaw the investigatory reports titled West Virginia Overdose Deaths Historical Overview 2001-2015, August 17, 2017, and the 2016 West Virginia Overdose Fatality Analysis, W.Va. DHHR December 20, 2107. I have firsthand knowledge of the information in these and other reports prepared by the State Health Commissioner and West Virginia DHHR. The State Health Commissioner also serves as the gatherer and custodian for health surveys and health statistics in West Virginia. As Commissioner, I was the custodian of those statistics and I have personal knowledge of various health statistics in West Virginia. All of this information, which was collected and analyzed under my supervision and direction, as well as my other background training, and experience, together with what I personally observed and witnessed in West Virginia, forms the basis for my opinion.

The opioid epidemic has been called the "most consequential preventable public health problem in the United States." According to the Centers for Disease Control and Prevention



(CDC), nearly 841,000 people have died since 1999 from a drug overdose.<sup>2</sup> In 2019, 70,630 drug overdose deaths occurred in the United States and the age-adjusted rate of overdose deaths increased by over 4% from 2018 (20.7 per 100,000) to 2019 (21.6 per 100,000). Opioids were involved in 49,860 overdose deaths in 2019 (70.6% of all drug overdose deaths). Drug overdose deaths are fast approaching the 100,000/year landmark. That number is likely to be exceeded in the future. There have been approximately one million deaths from drug overdoses over the past two decades.

One public health harm of the opioid epidemic is mortality. As the State Health Commissioner, I oversaw the Chief Medical Examiner of West Virginia. West Virginia is a state with a centralized system of medical examiners and death investigations. In 1999, West Virginia had a lower rate of overdose deaths than the national average at 4.1 per 100,000 population versus a national rate of 6.0.<sup>3</sup> In 2001, West Virginia surpassed the national rate and in 2010 became the state with the highest rate of overdose deaths in the nation. West Virginia continues to have the highest age-adjusted rate of drug overdose deaths involving opioids in the nation. In 2017, West Virginia's rate of 57.8 per 100,000 not only accounted for over 1,000 deaths but the rate exceeded the next state in line by 25% (Ohio: 46.3 per 100,000, Pennsylvania: 44.3 per 100,000, the District of Columbia: 44.0 per 100,000). This is more than threefold higher than the national rate of 14.6 deaths per 100,000 persons.

For every drug overdose death, there are many more nonfatal overdoses. Estimates as well as my experience shows that there are *twenty to thirty nonfatal opioid-related overdoses for every single fatal overdose*.<sup>4</sup> This does not fully take into account the total number of people suffering from addiction at any one time across the state.

Public harms from the opioid epidemic also include abuse and addiction. As Health Commissioner, I witnessed this dramatic rise in opioid addiction and abuse in West Virginia. Opioids bind to and activate opioid receptors on cells located in the brain, spinal cord, and other organs in the body, especially those involved in feelings of pain and pleasure, and can strongly reinforce the act of taking the drug, making the user want to repeat the experience.<sup>5</sup> People who use prescription opioids can feel relaxed and happy from dopamine release, but also experience drowsiness, confusion, nausea, constipation, and slowed breathing. Prescription opioids have effects similar to heroin.

Another public harm caused by the opioid epidemic is morbidity. One of the comorbidities associated with the opioid epidemic is Neonatal Abstinence Syndrome (NAS). Growing numbers of babies are being born with withdrawal symptoms and manifestations. NAS or neonatal opioid withdrawal syndrome (NOWS) may occur when a pregnant woman uses drugs such as opioids during pregnancy. Signs and symptoms of NAS may include body shakes (tremors), seizures (convulsions), overactive reflexes (twitching) and tight muscle tone, fussiness, excessive crying or having a high-pitched cry, poor feeding or sucking or slow weight gain, breathing problems

<sup>2</sup> Centers for Disease Control and Prevention. Wide-ranging online data for epidemiologic research (WONDER). Atlanta, GA: CDC, National Center for Health Statistics; 2020. Accessed at <http://wonder.cdc.gov>.

<sup>3</sup> <https://www.congress.gov/116/meeting/house/110367/witnesses/HHRG-116-IF02-Wstate-MullinsC-20200114.pdf>.

<sup>4</sup> Darke S, Mattick RP, Degenhardt L. *The ratio of non-fatal to fatal heroin overdose*. Addiction. 2003 Aug; 98(8):1169-71.

<sup>5</sup> <https://www.drugabuse.gov/publications/drugfacts/prescription-opioids>.



(including breathing really fast), fever, sweating, blotchy skin, or even death.<sup>6</sup> It is also important to note that opioid use disorder during pregnancy not only leads to poor outcomes and NAS, but a myriad of other potential conditions that we know very little about. These include long-term outcomes in learning disabilities, behavioral aspects, and potential increased predisposition to substance use as well as potential association with congenital birth defects. Substance use disorder has had a profound impact on West Virginia's children and their families. Local agencies will be addressing these poor outcomes for decades to come.

The West Virginia Department of Health and Human Resources (DHHR) released county-level NAS data for 2017 showing the overall incidence rate of NAS was 50.6 cases per 1,000 live births (5.06%) for West Virginia residents.<sup>7</sup> This is the highest in the nation. The highest incidence rate of NAS was 106.6 cases per 1,000 live births (10.66%) in Lincoln County, followed by Marshall County, where the incidence rate was 102.1 cases per 1,000 live births (10.21%). In West Virginia, the rate of NAS/NOWS cases doubled in the 3-year period between 2011 and 2014, from 25.2 cases to 51.2 cases per 1,000 hospital births.

In West Virginia, it has been estimated that each baby born with a diagnosis of NAS could cost up to \$1,057,895. These costs include local immediate healthcare expenses, foster care and special education costs, several local safety net programs, and lost wages.<sup>8</sup> Costs for long term poor outcomes remain elusive and may be substantial to local communities. With approximately 20,000 annual births and a state prevalence rate of NAS at 5%, the costs are estimated to be \$1.057 billion annually.

CDC estimates that 1 in 3 women of reproductive age filled an opioid prescription from 2008-2012 and opioid use disorder rates at delivery increased more than 4-fold between 1999 and 2014.<sup>9 10</sup> A recent national study showed a fivefold increase in the incidence of NAS/NOWS between 2004 and 2014, from 1.5 per 1,000 hospital births to 8.0 per 1,000 hospital births.<sup>11</sup> That is one baby born with NAS/NOWS every 15 minutes in the United States. During the same period, hospital costs for NAS/NOWS births increased from \$91 million to \$563 million (most likely an underestimate), after adjusting for inflation.

The opioid epidemic has also directly impacted the state's foster care system. Foster care placement in West Virginia has risen from 4,129 children in care in September 2011 to 6,895 in September 2019, an increase of 67%. Of those currently in foster care placement, the most common reasons are drug use by the parent (51.3%) followed by neglect (34.6%). It is important to note that drug use alone is not sufficient cause for removal. Furthermore, infants in foster care were 420% more likely to have been diagnosed with NAS.

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<sup>6</sup> Neonatal Abstinence Syndrome. Accessed at: [https://www.marchofdimes.org/complications/neonatal-abstinence-syndrome-\(nas\).aspx](https://www.marchofdimes.org/complications/neonatal-abstinence-syndrome-(nas).aspx).

<sup>7</sup> NAS Data for WV. Accessed at: <https://dhhr.wv.gov/News/2018/Pages/DHHR-Releases-Neonatal-Abstinence-Syndrome-Data-for-2017-.aspx>.

<sup>8</sup> Gupta R. Presentation to the Joint Legislative Committee on Health, West Virginia Legislature, 2018.

<sup>9</sup> Ailes EC, Dawson AL, Lind JN, et al. MMWR. 2015 Jan 23; 64(2):37-41.

<sup>10</sup> Haight SC, Ko JY, Tong VT, et al. MMWR. 2018 Aug 10; 67(31):845-849.

<sup>11</sup> Winkelman TNA, Villapiano N, Kozhimannil KB, Davis MM, Patrick SW. Incidence and Costs of Neonatal Abstinence Syndrome Among Infants With Medicaid: 2004-2014. [Pediatrics](#). 2018 Apr; 141(4).

Hepatitis B (HBV) and C (HCV) is associated with IDU more deaths in the United States than 60 other infectious diseases reported to CDC combined. West Virginia leads the nation in prevalence of these illnesses. In West Virginia, reported IDU has been increasing as documented in a 2012-2015 surveillance summary that showed 30-40% of cases identified IDU as a risk factor for both acute HBV and HCV. Since 2007, West Virginia has reported the highest incidence of acute HBV and ranked either first or second in acute HCV in the United States. In 2015 and 2016, the incidence rate per 100,000 persons of acute HBV in the state was greater than 13 times the national average (13.7 in 2015 and 13.5 in 2016 compared to 1 and 1.1. Similarly, for acute HCV, West Virginia is well above the national incidence rate at 4.8 and 5.7 times greater in 2015 and 2016, respectively.<sup>12</sup> In 2016, 42% of Acute HBV and 38% of acute HCV infections had a history of IDU.<sup>13</sup> West Virginia also experienced increases in outbreak of hepatitis A in March 2018. Nearly 70% of infected individuals reported illicit drug use, and 9% reported experiencing homelessness.

HIV/AIDS is another consequence of IDU. There are approximately 1,774 people living with HIV in West Virginia.<sup>14</sup> There were 78 new HIV diagnoses in 2017. CDC has stated that some areas in West Virginia are at the highest risk in the nation of having a HIV outbreak related to IDU. Additionally, in 2018 and 2019, the state had 114 new HIV cases associated with injection drug use compared to only 25 cases in 2016 and 2017. In 2019, the Bureau for Public Health investigated an HIV outbreak in Cabell County, West Virginia.<sup>15</sup> It was found the cause was related to IV drug use. The IV drug use was substantially caused by the transition from prescription opioids to heroin and other illegal drugs. Injection drug use clearly increases the risk of blood-borne infections including HIV and hepatitis, which spread efficiently through needle sharing.

West Virginia's healthcare system, including hospitals, emergency rooms, 911 systems, EMS systems, and other allied healthcare professional workforce, is having difficulty keeping up with the volume of nonfatal overdose visits, especially with untreated mental health conditions.

The continuing evolution of the harms arising from the opioid epidemic are all foreseeable consequences of the opioid epidemic and will continue into the future. The opioid epidemic is multigenerational and transgenerational. It will continue to affect West Virginia for many years. I have observed that not just individuals, but entire families are impacted. More and more grandparents and great grandparents are having to take care of their grandchildren and great grandchildren as parents remain in the jaws of opioid use disorder. Many mothers have begged me to find ways to incarcerate their children so they would live. I have seen patients where the child, mother and grandmother are all suffering from OUD and often share the same needle and syringe to inject IV drugs.

Starting in the mid-1990s, opioids were increasingly advocated as an option to treat pain, particularly for chronic non-cancer pain—a use that had rarely been seen previously. A 1980 one-paragraph letter with five sentences sent to the editors of the *New England Journal of Medicine*

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<sup>12</sup> Gupta, R. White Paper: The Need for Harm Reduction Programs in West Virginia  
Accessed at: [https://oepps.wv.gov/harm\\_reduction/documents/training/hrp\\_white\\_paper.pdf](https://oepps.wv.gov/harm_reduction/documents/training/hrp_white_paper.pdf).

<sup>13</sup> Gupta, R. Hepatitis B and C infections in West Virginia. April 2018. Accessed at:  
[https://oepps.wv.gov/hepatitis/documents/data/Summary\\_2016\\_Acute\\_HBV-HCV.pdf](https://oepps.wv.gov/hepatitis/documents/data/Summary_2016_Acute_HBV-HCV.pdf).

<sup>14</sup> AIDS Vu. Accessed at: <https://aidsvu.org/local-data/united-states/south/west-virginia/>.

<sup>15</sup> <https://www.cdc.gov/mmwr/volumes/69/wr/mm6916a2.htm>.

that challenged the practice of using opioids only for relief of acute pain,<sup>16</sup> was referenced over 600 times in support of using opioids for non-acute pain.<sup>17</sup>

From the late 1990s through 2012, West Virginia saw a dramatic increase in the number of prescription opioids. Seven hundred eighty million opioid pills were delivered to West Virginia from 2006 to 2012.<sup>18</sup> That number of pills results in 438 pills per person during those years including every man, woman, child, and baby in the state. The total number of prescriptions dispensed peaked in 2012 at more than 255 million at a dispensing rate of 81.3 prescriptions per 100 persons. In 2009, the rate for West Virginia was 145.5 opioid prescriptions per 100 persons.<sup>19</sup> In 2015, when I became the Commissioner, the rate was 126.4 opioid prescriptions per 100 persons. That rate for 2019 was 59.4. This rate is higher than the national average and means there was an opioid prescription for almost every other person across West Virginia.

The dramatic rise in prescription opioids in West Virginia laid the foundation for the opioid epidemic the state currently faces. Data demonstrates a clear relationship between the increase in availability and volume of opioid prescription drugs and a sharp increase in the prevalence of opioid addiction.<sup>20</sup> An increase in the volume of prescription opioids is also directly correlated with increases in OUD, deaths, and their many social, societal, and economic consequences. Data has demonstrated that the opioid-analgesic poisoning death rate nearly quadrupled from 1999 through 2011.<sup>21</sup>

The dramatic rise in prescription opioids in West Virginia caused the public harms of abuse, addiction, morbidity, and mortality. Increased volume drives increased demand and diversion. As a result of the increase in the volume of prescription opioid pills delivered to West Virginia, there was a corresponding dramatic rise in incidence and prevalence of opioid use disorder and addiction among the West Virginia population, including patients as well as non-patients who obtained opioid pills through diversion. West Virginia also saw a corresponding rise in diversion through pill mills and doctors who were prescribing opioids outside the standard of care and often not in compliance with state and federal law. This dramatic increase in opioid use that was not medically necessary in West Virginia, would not have occurred without the corresponding increase in the availability of prescription opioids. The increase in the incidence of opioid abuse and addiction, driven by increased supply, had the foreseeable consequence of causing an increased need among the population of more opioids and other drugs to replace the effects of opioids when opioids were either no longer available or other cheaper street alternative to opioids were available. Thus, increased opioid supply drove a corresponding increase in demand for opioids and other illegal drugs in West Virginia.

In West Virginia, prescription opioids substantially contributed to heroin and other illegal drug use. As the West Virginia State Health Commissioner, I oversaw and directed investigations

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<sup>16</sup> Porter J. Jick H. Addiction rare in patients treated with narcotics. N Engl J Med. 1980; 302: 123.

<sup>17</sup> Leung P.T.M. Macdonald E.M. Stanbrook M.B. Dhalla I.A. Juurlink D.N. A 1980 letter on the risk of opioid addiction. N Engl J Med. 2017; 376: 2194-2195.

<sup>18</sup> Eric Eyre, Drug firms poured 780M painkillers into WV amid rise of overdoses, Charleston Gazette-Mail, December 17, 2016, available at <http://www.wvgazettemail.com/news-health/20161217/drug-firms-poured-780m-painkillers-into-wv-amid-rise-of-overdoses>.

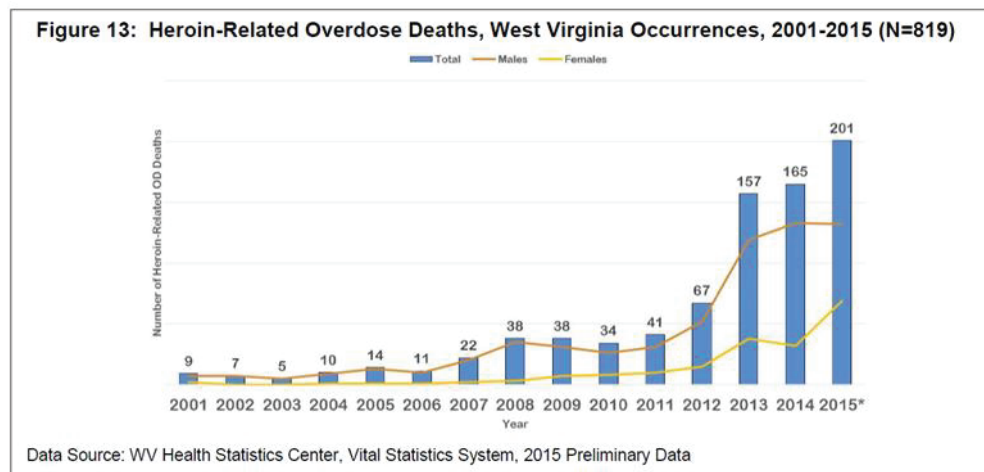
<sup>19</sup> <https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html>.

<sup>20</sup> <https://www.cdc.gov/opioids/basics/epidemic.html>.

<sup>21</sup> <https://www.cdc.gov/nchs/products/databriefs/db166.htm>.

into the cause and effects of the opioid epidemic. We conducted a historical analysis of drug overdose deaths in West Virginia from 2001 through 2015. We also did a more in-depth analysis of every overdose that occurred in West Virginia in 2016. We found a substantial number of people who overdosed were prescribed opioids within one year of death. We also found that a much lower percentage of people who died from an overdose had a prescription within one month of their death. This data demonstrated that a significant number of people prescribed opioids had transitioned to heroin and other illegal drugs. This relationship was confirmed by information learned in interviews I oversaw as part of the West Virginia Department of Health's mandated activities and investigations.

From in or about 2012, there was a slowing, and then ultimately, a decrease in the number of prescription opioids. During this same time, West Virginia saw a corresponding increase in heroin and other illegal drug use, evidencing the relationship between prescription opioids and heroin. West Virginia also saw a similar corresponding rise in fentanyl use, a drug often used in connection with heroin, further evidencing the relationship between prescription opioid use and illegal drug use.



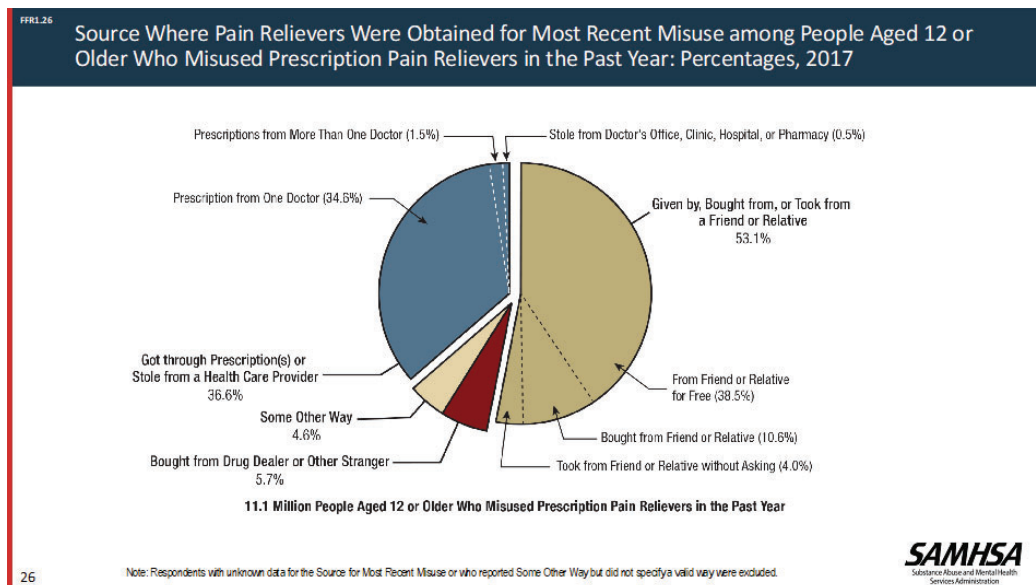
The relationship between prescription opioids and illegal drug use, including heroin and fentanyl, was evidenced by my experience in West Virginia serving in various capacities. When the DEA or other law enforcement forced the closure of a pill mill or arrested a doctor for illegally prescribing opioids, I was often given advance notice of these actions to prepare the surrounding communities for the anticipated fallout, including a rise in heroin and other illegal drug overdoses due to the loss of supply of prescription opioids. Those affected communities did see a corresponding increase in heroin and other illegal drug overdoses and overdose deaths temporal to the closings of pill mills and physician's practices.

The relationship and transition from prescription opioid use to illegal drug, including heroin and fentanyl, use is foreseeable. Heroin is an opioid drug made from morphine, a natural substance taken from the seed pod of various opium poppy plants. Heroin has a chemical structure similar to morphine and its effect on the brain is similar to prescription opioids. Heroin utilizes the same pathways as prescription opioids in the brain. The affected brain craves and seeks this effect. Heroin enters the brain rapidly and binds to opioid receptors on cells located in many areas, especially those involved in feelings of pain and pleasure and in controlling heart rate, sleeping,

and breathing. Heroin and other synthetic opioids can serve as a replacement effect to the addiction-impacted brain, and are, therefore, sought by persons suffering from addiction to prescription opioids when prescription opioids are no longer available. In addition, synthetic opioids are a cheaper, more readily available street alternative.

Heroin and other synthetic opioids, however, have a much more powerful effect on the brain and body. They create a more powerful addiction and increase the likelihood of overdose once this transition has occurred. On the street, heroin often contains additives, such as sugar, starch, or powdered milk, that can clog blood vessels leading to permanent damage in the lungs, liver, kidneys, or brain. I have treated these patients with poor outcomes. Also, sharing drug injection equipment and having impaired judgment from drug use can increase the risk of contracting life-threatening infectious diseases such as HIV and hepatitis.

In addition to my own experiences, the medical literature and research support the transition from prescription opioids to other illegal drugs, such as heroin and fentanyl. More than 80% of heroin users began with prescription opioids.<sup>22</sup>



**Figure: Sources of Pain Relievers, 2017<sup>23</sup>**

According to data, the incidence of heroin initiation is 19 times higher among those who report prior non-medical pain-reliever use than among those who do not (0.39% vs. 0.02%), similar to what I experienced on the ground in West Virginia.<sup>24</sup> Heroin and prescription opioid pain relievers belong to a single class of drugs, but each is associated with distinct risks. The risk of overdose and negative consequences is greater with heroin due to the lack of control over the

<sup>22</sup> National Institute on Drug Abuse. Accessed at: <https://www.drugabuse.gov/publications/research-reports/relationship-between-prescription-drug-heroin-abuse/prescription-opioid-use-risk-factor-heroin-use>.

<sup>23</sup> The 2017 National Survey on Drug Use and Health. Accessed at: <https://www.samhsa.gov/data/sites/default/files/nsduh-ppt-09-2018.pdf>.

<sup>24</sup> Muhuri PK, Gfroerer JC & Davies MC. Associations of nonmedical pain reliever use and initiation of heroin use in the United States. (2013). Accessed at: <https://www.samhsa.gov/data/sites/default/files/DR006/DR006/nonmedical-pain-reliever-use-2013.htm>.



purity of the drug and its adulteration with other drugs, such as fentanyl—originally a potent prescription opioid but now often synthesized in clandestine labs. All of these factors increase the risk for overdose since users have no way of assessing the potency of the drug before taking it and, in the case of adulteration with fentanyl, users typically do not have the opportunity to become tolerant upon being exposed to fatal doses.

My background, training, experience, investigation, analysis, and findings as the local health officer and Health Commissioner for West Virginia inform me of the causal link between prescription opioids and other illicit drugs. The studies I performed, interviews I conducted, and what I observed, all confirm this relationship. My experience also correlates with research that has shown that prescription opioid misuse is a high-risk factor for heroin use. As the availability of prescription opioids are leveled off or reduced, there is a corresponding increase in the rise of heroin and other opioids, and a continued rise in opioid use disorder and opioid overdoses. This relationship is explained by opioid use disorder and the impacted individual's physiological need to seek a replacement for the prescription opioid that are no longer available. The increase in heroin-related overdoses is the consequence of reducing the availability of prescription opioids.<sup>25</sup>

<sup>26</sup> Thus, the source and type of opioid use has changed over time, but, in my opinion, based on my education, training, and experience as well as the peer-reviewed literature, the addiction that has resulted arose from the excessive numbers of dosage units of prescription opioids. The consequential sequelae of the opioid epidemic will require many years of effective measures to abate.

Methamphetamine is a highly addictive central nervous system stimulant. Methamphetamine use is associated with a range of health harms, including psychosis and other mental disorders, cardiovascular and renal dysfunction, infectious disease transmission, and overdose. Recent data demonstrates that methamphetamine overdose deaths have surged in an eight-year period in the United States which is consistent with my experiences.<sup>27</sup> Research conducted at the National Institute on Drug Abuse, part of the National Institutes of Health, revealed that rapid rises are occurring across all racial and ethnic groups. Deaths involving methamphetamines rose from 1.8 to 10.1 per 100,000 men, and from 0.8 to 4.5 per 100,000 women. This represents a more than five-fold increase from 2011 to 2018. I have seen similar impacts in local communities across West Virginia.

Co-use of opioids and stimulants such as methamphetamine has been a practice widely documented in studies of people who inject drugs (PWID) such as heroin.<sup>28</sup> For example, approximately 13% of PWID participants in recent Australian drug monitoring surveys reported

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<sup>25</sup> Cicero, T. J., Ellis, M. S., Surratt, H. L. & Kurtz, S. P. The Changing Face of Heroin Use in the United States: A Retrospective Analysis of the Past 50 Years. *JAMA Psychiatry* 71, 821 (2014).

<sup>26</sup> Mars, S. G., Bourgois, P., Karandinos, G., Montero, F. & Ciccarone, D. 'Every "never" I ever said came true': transitions from opioid pills to heroin injecting. *Int. J. Drug Policy* 25, 257–266 (2014).

<sup>27</sup> Methamphetamine Overdose Deaths in the US by Sex and Race and Ethnicity.

[https://jamanetwork.com/journals/jamapsychiatry/article-abstract/2774859?guestAccessKey=95ca43ca-bfbc-4805-8b74-e542fa167f1b&utm\\_source=For\\_The\\_Media&utm\\_medium=referral&utm\\_campaign=ftm\\_links&utm\\_content=tfi&utm\\_term=012021](https://jamanetwork.com/journals/jamapsychiatry/article-abstract/2774859?guestAccessKey=95ca43ca-bfbc-4805-8b74-e542fa167f1b&utm_source=For_The_Media&utm_medium=referral&utm_campaign=ftm_links&utm_content=tfi&utm_term=012021).

<sup>28</sup> Leri F, Bruneau J, Stewart J. Understanding polydrug use: review of heroin and cocaine co-use. *Addiction*. 2003;98(1):7–22.



using a combination of opioids and stimulants on the day preceding their survey.<sup>29</sup>

In a CDC study among adults using methamphetamine within the past year, an estimated 40.4% used or misused prescription opioids, 30.4% used cocaine, and 16.9% used heroin within the past year.<sup>30</sup> Data shows that co-use of methamphetamine and opioids has been used by people who inject drugs to facilitate intoxication, sometimes as the result of ineffective opioid substitution therapy (OST) treatment and perceived lack of pleasure after stabilization on OST treatment.<sup>31</sup> My experience further shows that many drug dealers will also “cut” methamphetamine with other substances to sell less of the actual drug for the same price and fetch a greater profit margin. In some cases, methamphetamine is cut with prescription medications including opioids.<sup>32</sup>

“We were surprised to see such an increase in meth use among people using opioids,” said lead researcher Theodore Cicero, Ph.D., John P. Feighner Professor of Psychiatry at Washington University in St. Louis, who described the findings at the recent annual meeting of the College on Problems of Drug Dependence.<sup>33</sup> “We knew that since there was a clamp-down on opioid abuse, people were switching to other drugs, but our main concern was heroin. We were surprised to not only see a rise in heroin use, but a sharp increase in the use of methamphetamine.” Specifically, Dr. Cicero said, amphetamines, such as methamphetamine, produce the opposite effect of opioids. “They wake you up, while opioids are downers,” he said. “Apparently, more people use both drugs so one counteracts the effect of the other—they can balance each other out.” He emphasized that each drug alone carries dangers and mixing them is especially hazardous.

In my opinion, based on my education, training, and experience as well as the peer-reviewed literature, the opioid epidemic has substantially contributed to the use of methamphetamines in West Virginia.

From the 1990s through 2017, there was no change in public health conditions to justify the substantial number of opioid prescription pills supplied to West Virginia. Chronic pain is described as pain lasting longer than three months or past the time of normal tissue healing generally. Active cancer treatment, palliative care, and end-of-life care are associated with long term pain. Other medical conditions that can lead to chronic pain include arthritis, musculoskeletal conditions, diabetic neuropathy, and work-related injuries. However, from in or about 2000 through 2017, the medical conditions which would reasonably give rise to the need for pain treatment in West Virginia remained essentially unchanged.

When asked about the prevalence of poor health limitation in either 14 of the past 30 days or every day in past 30 days, West Virginians did not exhibit a significant increase of poor health

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<sup>29</sup> Peacock A, Gibbs D, Sutherland R, Uporova J, Karlsson A, Bruno R, et al. Australian Drug Trends 2018. Key Findings from the National Illicit Drug Reporting System (IDRS) Interviews [Internet]. Sydney, National Drug and Alcohol Research Centre, UNSW Australia; 2018. Available from: <https://ndarc.med.unsw.edu.au/resource/australian-drug-trends-2018-key-findings-national-illicit-drug-reporting-system-idrs>.

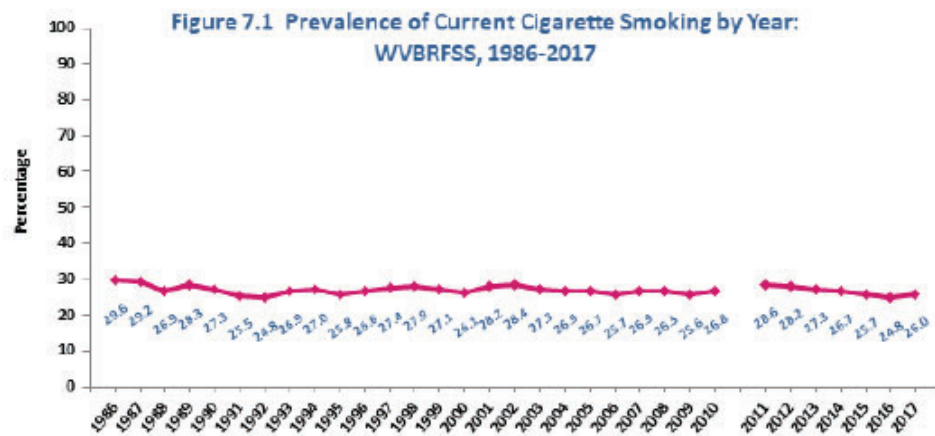
<sup>30</sup> <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912a1.htm>.

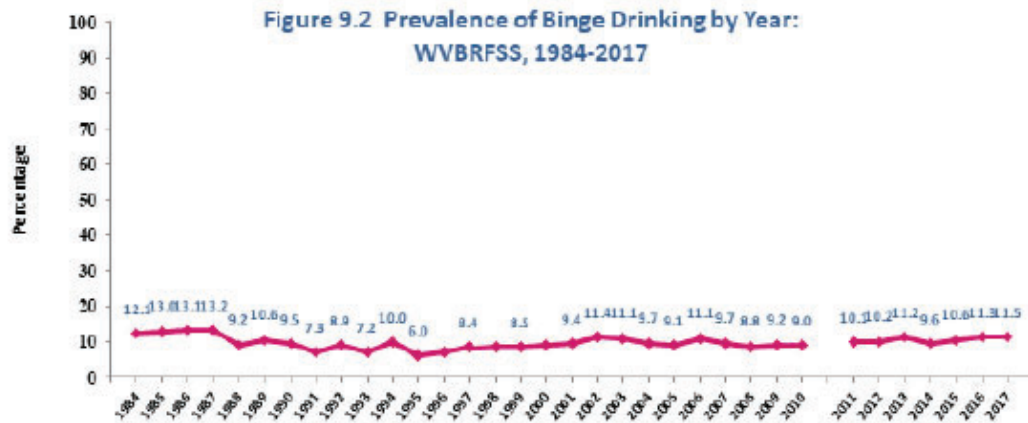
<sup>31</sup> <https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-020-00360-9>.

<sup>32</sup> <https://www.addictioncenter.com/opiates/>.

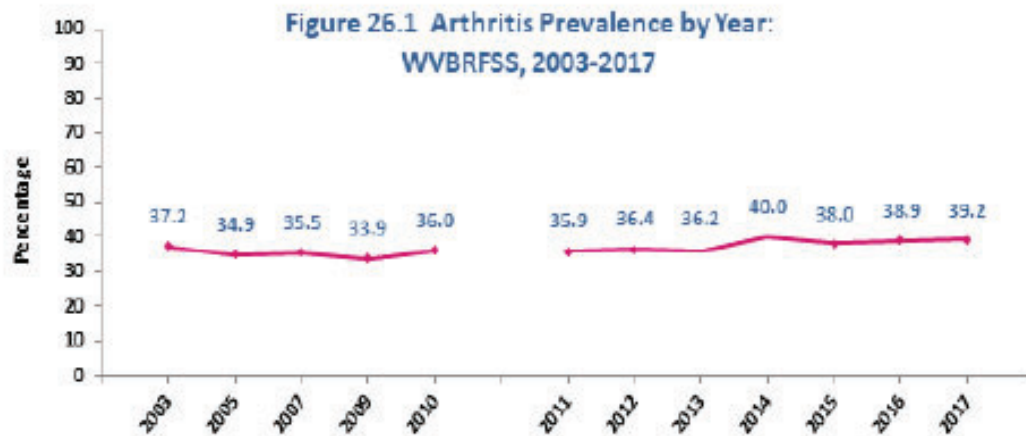
<sup>33</sup> <https://drugfree.org/drug-and-alcohol-news/featured-news-meth-use-rising-among-people-use-opioids/>.

between 2011 and 2017 (see figure below). In terms of suffering from other addictions, even cigarette smoking and binge drinking remained relatively unchanged from 1980's to 2017.



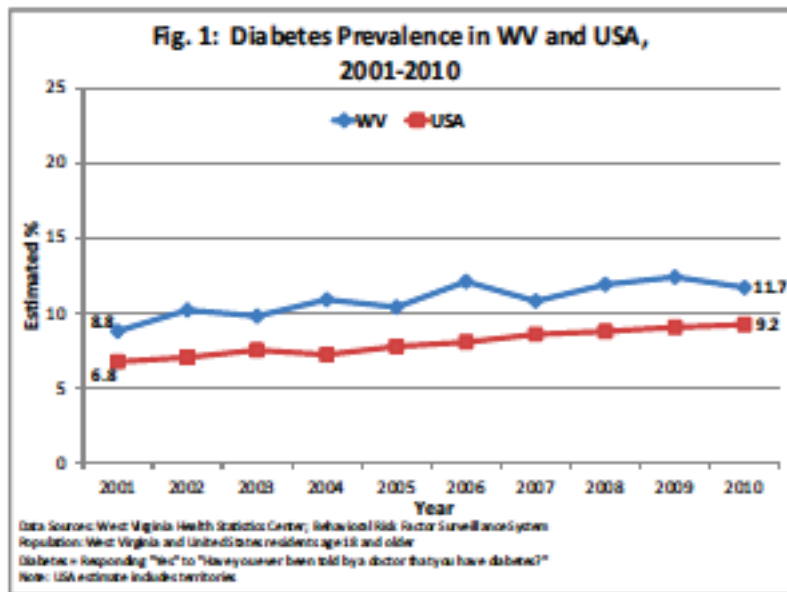


The prevalence of arthritis—a condition often associated with chronic pain—has remained essentially the same in West Virginia.

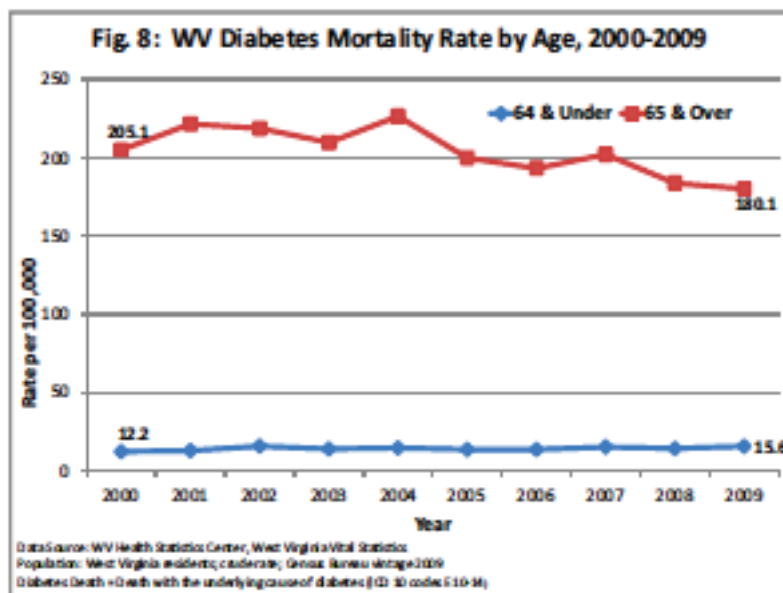


The West Virginia Health Statistics center Brief # 28 was published to review diabetes in detail.<sup>34</sup> It compares the prevalence of diabetes in West Virginia and the nation as demonstrated in the chart below.

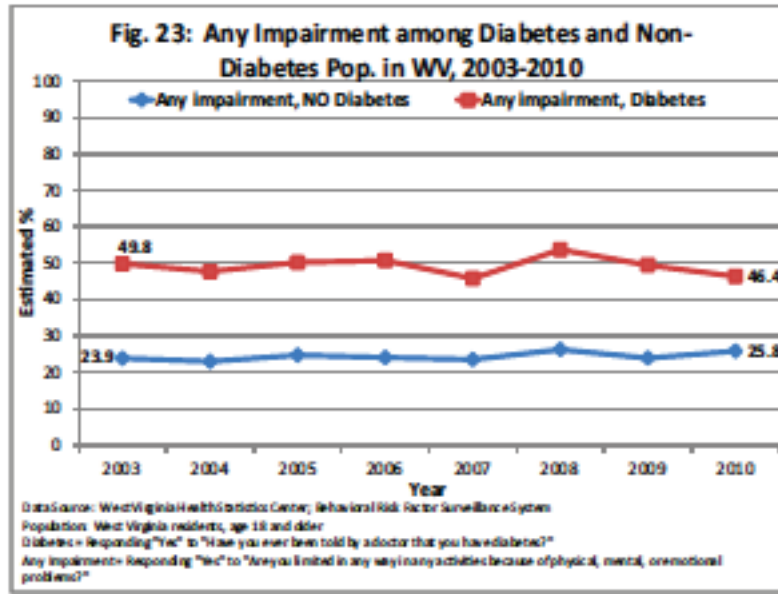
<sup>34</sup> [http://www.wvdhhr.org/bph/hsc/pubs/briefs/028/brief28\\_20121220\\_health\\_eq\\_stat.pdf](http://www.wvdhhr.org/bph/hsc/pubs/briefs/028/brief28_20121220_health_eq_stat.pdf).



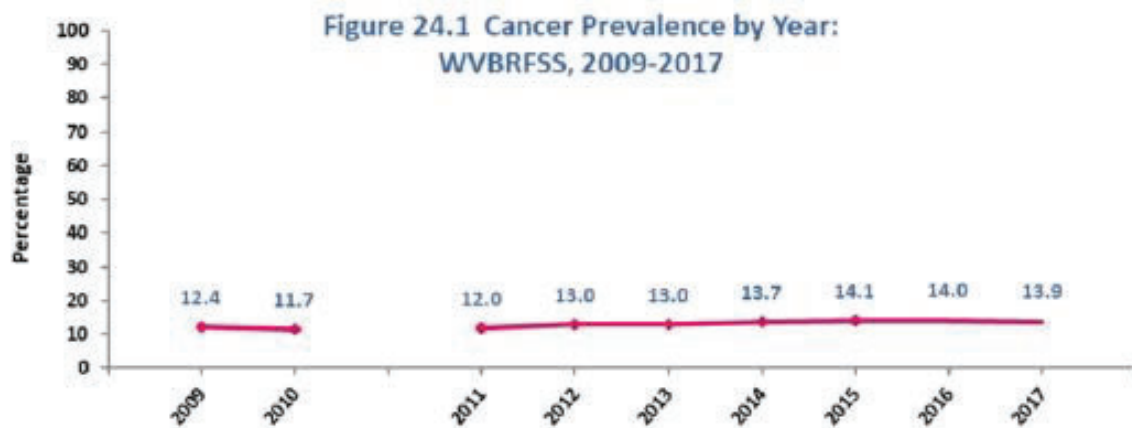
However, as shown in the chart below, from 2000-2009, West Virginia's mortality from diabetes in individuals over 65 years of age actually fell significantly during this period.



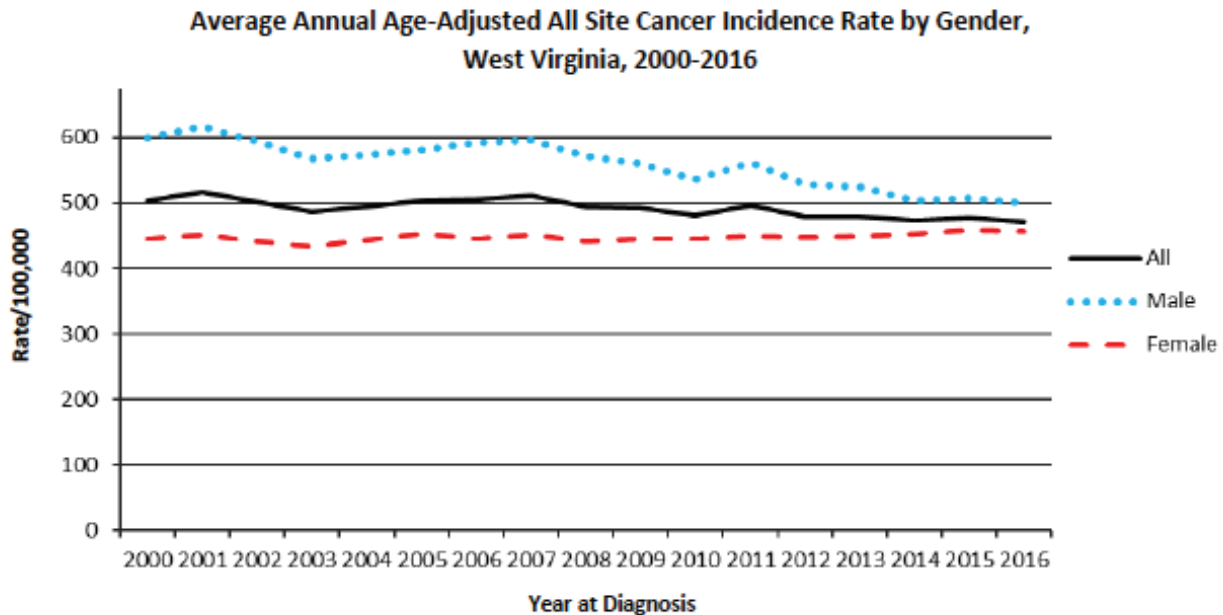
From 2003 to 2010, the number of West Virginians with diabetes who suffered from any impairment actually decreased from 49.8% to 46.4% (shown below). Looking at this type of data is critical since it is those chronic impairments that result in pain, not just a diagnosis of diabetes. For example, people with uncontrolled diabetes may suffer from a chronic impairment called diabetic neuropathy that may require pain management.



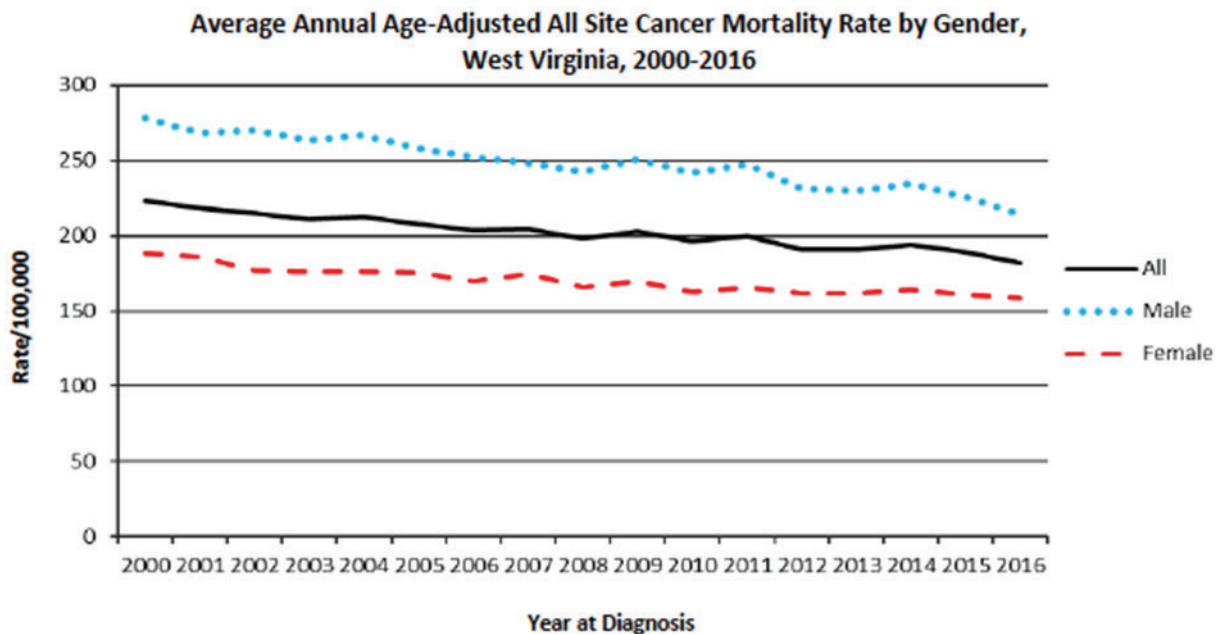
Another condition where opioid therapy may be needed for pain control could be certain cancers. West Virginia's cancer prevalence from 2009 to 2017 remained essentially the same (12.2% to 13.9%).



The 2019 Cancer Burden Report issued by West Virginia University and the State of West Virginia demonstrates that from 2000-2016, West Virginia's cancer burden decreased.<sup>35</sup> In 2000, approximately 504 people per 100,000 suffered from cancer while that number declined to 472 per 100,000 in 2016.



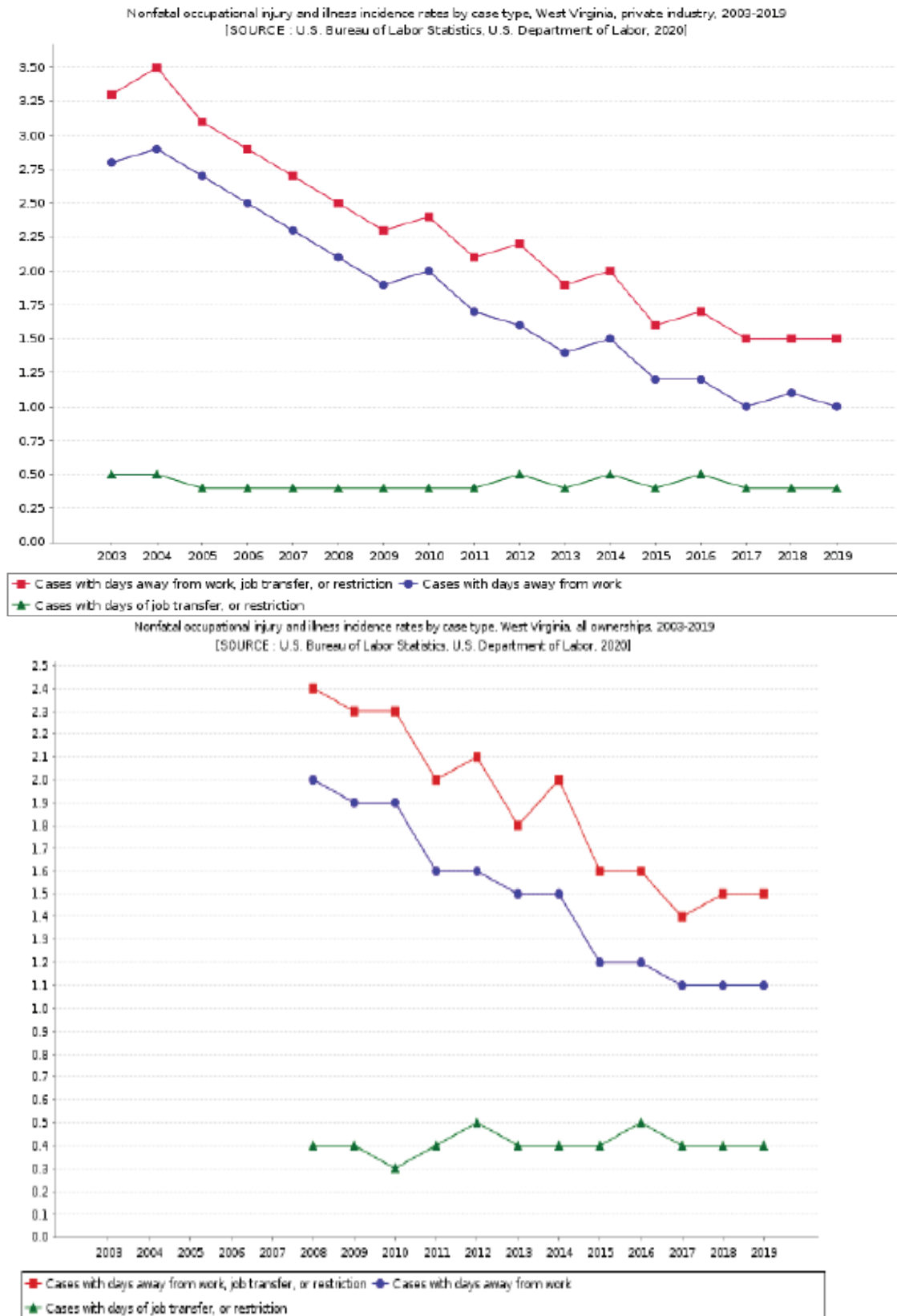
Similarly, deaths from cancer also significantly declined from 2000 to 2016. As represented below, total deaths in West Virginia declined from 222.7 per 100,000 to 182 per 100,000. Near death or end-of-life is one area where chronic opioid therapy might be prescribed.



<sup>35</sup> <https://oepls.wv.gov/cancer/documents/data/burdenreport2019.pdf>.



Work related accidents and injuries, which can lead to need pain treatment, have decreased in West Virginia.<sup>36</sup>



Based upon my work and what I perceived during my tenure as West Virginia's Health Commissioner, a substantial portion of the prescription opioids delivered to West Virginia from the late 1990s through 2016 were subject to diversion. This was evidenced by the findings reported in the 2016 West Virginia Overdose Fatality Analysis, W.Va. DHHR December 20, 2017; the West Virginia Overdose Deaths Historical Overview 2001-2015, August 17, 2017; interviews I conducted and oversaw; and what I witnessed, including the shutting down of pill mills and physicians being prosecuted or losing their medical license or privilege to practice medicine because of prescribing irregularities.

Hundreds of millions of prescription opioid pills were delivered into West Virginia, at the same time West Virginia's public health need for prescription opioid was not increasing. data reflects that in West Virginia a very small percentage of physicians were responsible for a large portion of the volume of prescription opioids, which led to diversion.<sup>37</sup> For example, between 1999-2017, more than half of the total MMEs prescribed in West Virginia was concentrated in the top 150 prescribers which represents only approximately 3% of the total number of prescribers in West Virginia. In 2006, the top 300 prescribers in West Virginia were responsible for 70.3% of the total MMEs prescribed in the state. That number was 72.43% in 2012. Many of West Virginia's top 20 prescribers either lost or surrendered their medical license due to prescription related conduct. Additionally, "pill mills" were closed by law enforcement in West Virginia. This evidence confirms the opinion I formed as West Virginia Health Commissioner that a substantial portion of the pills delivered to West Virginia from 1997 through 2016 were subject to diversion.

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All of my opinions expressed herein are held to a reasonable degree of probability and certainty. I reserve the right to amend or supplement my opinions as additional information is made available to me.

**Rahul  
Gupta**

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**Rahul Gupta, MD, MPH, MBA**

<sup>37</sup> See IQVIA data provided by Lacey Keller of Gryphon Strategies attached as Exhibit 1.

## Twenty Highest Opioid Prescribers in the State (IQVIA Xponent: West Virginia, 1997-2017)

*The table is ordered by descending dosage units. Percentages and ranks are among all physicians in West Virginia.*

Name	Prescriber Specialty	Address	City	County	First Year	Last Year	Opioid Prescriptions	Prescriptions Rank	% Prescriptions	Opioid Dosage Units	% Dosage Units	Dosage Units Rank	Opioid MMEs	% MMEs	MMEs Rank
IRAJ DERAKHSHAN	NEUROLOGY	415 MORRIS ST	CHARLESTON	KANAWHA	1997	2015	250,398	1	0.7	26,718,977	1.3	1	513,653,346	1.9	2
MICHAEL SHRAMOWIAT	PAIN MEDICINE	1158 46TH ST	VIENNA	WOOD	1997	2017	245,394	2	0.7	26,554,963	1.3	2	386,805,352	1.4	3
MICHAEL REZAIAN	RHEUMATOLOGY	176 HEALTH CARE LN	MARTINSBURG	BERKELEY	1997	2017	167,850	5	0.5	15,651,937	0.8	3	338,233,853	1.2	4
ROBERT KROPAC	SURGERY	311 COURTHOUSE RD	PRINCETON	MERCER	1997	2017	185,662	3	0.5	15,143,103	0.7	4	149,644,061	0.5	24
KATHERINE HOOVER	FAMILY/GENERAL	101 STONEYBROOK RD	CLARKSBURG	HARRISON	1997	2010	173,654	4	0.5	15,104,371	0.7	5	143,722,374	0.5	26
NARCISO RODRIGUEZ-CAYRO	ANESTHESIOLOGY	1902 HARPER RD	BECKLEY	RALEIGH	2003	2015	142,877	10	0.4	15,081,833	0.7	6	265,463,310	1.0	8
DELENO WEBB	PAIN MEDICINE	220 13TH ST	HUNTINGTON	CABELL	1997	2017	128,805	14	0.4	14,431,799	0.7	7	540,977,293	2.0	1
JORGE ROIG	ANESTHESIOLOGY	651 COLLIERS WAY	WEIRTON	HANCOCK	2000	2017	157,694	8	0.5	14,257,161	0.7	8	268,318,235	1.0	7
ROBERT HOLLEY	FAMILY/GENERAL	2500 JEFFERSON AVE	POINT PLEASANT	MASON	1997	2017	159,680	7	0.5	13,380,088	0.6	9	204,228,957	0.7	15
DAVID CARAWAY	ANESTHESIOLOGY	2900 1ST AVE	HUNTINGTON	CABELL	1998	2015	167,634	6	0.5	11,628,572	0.6	10	212,130,221	0.8	9
ANITA DAWSON	FAMILY/GENERAL	501 ONEY AVE	HUNTINGTON	CABELL	1997	2014	102,423	22	0.3	11,080,511	0.5	11	141,799,529	0.5	27
JOSE VILLAVICENCIO	FAMILY/GENERAL	1325 LOCUST AVE	FAIRMONT	MARION	1997	2016	100,923	24	0.3	10,705,544	0.5	12	269,151,475	1.0	5
PHILIP FISHER	PHYSICAL/OCCUPATIONAL REHABILITATION	3554 US ROUTE 60 E	BARBOURSVILLE	CABELL	1997	2012	117,034	18	0.3	10,615,781	0.5	13	268,391,148	1.0	6
MUHAMMED NASHER ALNEAM	NEUROLOGY	500 POPLAR ST	SOUTH CHARLESTON	KANAWHA	2003	2017	121,175	16	0.3	10,363,043	0.5	14	210,922,762	0.8	11
MICHAEL MUSCARI	FAMILY/GENERAL	114 MAIN ST	MAN	LOGAN	1997	2017	146,165	9	0.4	9,689,766	0.5	15	75,822,925	0.3	51
TIMOTHY DEER	PAIN MEDICINE	400 COURT ST	CHARLESTON	KANAWHA	1997	2017	142,000	11	0.4	9,481,779	0.5	16	207,666,847	0.7	12
MICHAEL KOSTENKO	FAMILY/GENERAL	114 E MAIN ST	BECKLEY	RALEIGH	1997	2016	137,483	13	0.4	9,445,798	0.5	17	205,439,274	0.7	14
GARY HANSON	FAMILY/GENERAL	2619 PENNSYLVANIA AVE	WEIRTON	HANCOCK	1997	2016	117,217	17	0.3	9,233,623	0.4	18	207,044,900	0.7	13
RONALD BROWNFIELD	FAMILY/GENERAL	401 CAMDEN RD	HUNTINGTON	WAYNE	1997	2017	101,040	23	0.3	9,226,249	0.4	19	138,684,867	0.5	28
DAVID HESS	FAMILY/GENERAL	215 W MAIN ST	BRIDGEPORT	HARRISON	1997	2017	81,268	32	0.2	8,988,857	0.4	20	211,297,742	0.8	10

Share of Total Prescribing Held by 150 Highest Prescribers in the State  
(IQVIA Xponent: West Virginia, 1997-2017)

*The table below shows prescribing totals and percentages of the 150 highest prescribers, based off of dosage units, based on all opioid prescriptions, dosage units, and MMEs in West Virginia.*

Year	Top 150 Prescribers	Total Prescribers	% of Opioid Prescribers	Top 150 Total Prescriptions	% of Prescriptions	Top 150 Total Dosage Units	% of Dosage Units	Top 150 Total MMEs	% of MMEs
1997	150	4,098	3.7	217,334	29.6	12,225,136	41.4	116,333,484	47.7
1998	150	4,118	3.6	253,066	29.5	14,455,803	41.2	148,601,314	48.1
1999	150	4,186	3.6	302,928	30.6	17,924,630	42.6	216,785,095	51.2
2000	150	4,198	3.6	357,250	31.8	22,949,388	44.9	334,742,026	55.1
2001	150	4,256	3.5	385,674	31.9	26,195,834	45.5	385,979,368	54.3
2002	150	4,295	3.5	403,574	30.5	30,126,308	45.2	448,564,705	53.9
2003	150	4,417	3.4	468,718	31.8	36,331,565	46.1	557,585,084	54.9
2004	150	4,710	3.2	518,496	31.9	41,556,629	46.2	630,309,915	54.4
2005	150	4,830	3.1	583,916	32.1	48,808,070	47.2	711,209,673	54.4
2006	150	4,887	3.1	676,280	33.7	59,174,039	48.8	868,674,432	56.4
2007	150	4,977	3.0	730,507	34.4	64,249,213	48.7	1,003,149,554	57.8
2008	150	5,097	2.9	791,533	35.5	70,015,576	49.2	1,084,869,734	58.0
2009	150	5,251	2.9	813,700	35.6	72,660,473	48.6	1,162,007,022	57.8
2010	150	5,360	2.8	770,735	34.3	69,175,785	47.0	1,176,580,171	57.6
2011	150	5,506	2.7	791,135	34.7	72,251,829	47.3	1,280,170,818	58.8
2012	150	5,758	2.6	744,197	34.1	68,701,717	46.8	1,201,542,217	57.6
2013	150	5,780	2.6	694,708	34.7	64,068,358	47.2	1,081,556,793	56.8
2014	150	5,835	2.6	664,845	34.9	60,518,774	47.4	1,047,088,768	57.6
2015	150	5,705	2.6	577,259	35.1	53,521,100	47.5	923,941,732	57.5
2016	150	5,693	2.6	478,857	34.6	44,144,489	47.0	728,135,520	55.5
2017	150	5,723	2.6	415,946	35.9	37,420,905	48.2	562,684,585	55.5

Share of Total Prescribing Held by 300 Highest Prescribers in the State  
(IQVIA Xponent: West Virginia, 1997-2017)

*The table below shows prescribing totals and percentages of the 300 highest prescribers, based off of dosage units, based on all opioid prescriptions, dosage units, and MMEs in West Virginia.*

Year	Top 300 Prescribers	Total Prescribers	% of Opioid Prescribers	Top 300 Total Prescriptions	% of Prescriptions	Top 300 Total Dosage Units	% of Dosage Units	Top 300 Total MMEs	% of MMEs
1997	300	4,098	7.3	314,367	42.4	16,569,598	55.7	151,836,683	62.2
1998	300	4,118	7.3	357,100	41.1	19,484,201	55.1	190,765,656	61.8
1999	300	4,186	7.2	425,767	42.5	23,884,789	56.3	276,297,659	65.2
2000	300	4,198	7.1	491,279	43.1	30,124,256	58.4	414,235,006	68.2
2001	300	4,256	7.0	535,831	43.9	34,332,940	59.2	486,437,197	68.5
2002	300	4,295	7.0	567,672	42.4	39,639,068	59.0	569,863,062	68.5
2003	300	4,417	6.8	646,852	43.4	47,370,154	59.7	699,569,478	68.8
2004	300	4,710	6.4	699,937	42.6	54,116,914	59.7	797,443,291	68.9
2005	300	4,830	6.2	794,233	43.2	63,249,053	60.6	908,069,398	69.5
2006	300	4,887	6.1	906,965	44.7	75,902,027	62.0	1,082,243,462	70.3
2007	300	4,977	6.0	971,333	45.3	82,446,638	62.0	1,238,835,306	71.3
2008	300	5,097	5.9	1,052,971	46.7	90,231,705	62.9	1,343,411,296	71.8
2009	300	5,251	5.7	1,082,719	46.9	94,318,191	62.6	1,447,431,861	72.1
2010	300	5,360	5.6	1,046,030	46.1	91,417,245	61.6	1,467,161,936	71.8
2011	300	5,506	5.4	1,078,646	46.8	95,741,211	62.2	1,579,818,008	72.6
2012	300	5,758	5.2	1,019,587	46.3	91,750,909	62.0	1,509,661,852	72.4
2013	300	5,780	5.2	958,151	47.4	85,561,107	62.6	1,372,972,275	72.2
2014	300	5,835	5.1	920,451	47.9	81,165,009	63.2	1,322,332,941	72.8
2015	300	5,705	5.3	800,682	48.2	71,959,870	63.3	1,169,344,855	72.7
2016	300	5,693	5.3	671,730	48.1	59,822,232	63.3	945,352,107	72.1
2017	300	5,723	5.2	584,049	49.9	50,440,834	64.6	735,202,377	72.5